PTWS Working Group 1
Understanding Tsunami Hazard

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OVERVIEW OF ICG/PTWS-WG1

1 **Develop** and promote best practice tsunami risk reduction material, programmes, standards, and tools for understanding tsunami risk, to support emergency management and early warning, including but not limited to:

- hazard assessment and coastal inundation models and products
- risk assessment methodology and risk forecasting
- scenario assessments including maximum credible and most likely events to understand likely exposure, vulnerability, and event frequency
- forecast and threat models
- evacuation and inundation modelling
- use of new and improved data including digital elevation modelling (DEM), GNSS and paleotsunami information

Work with scientific experts to support Member State tsunami risk assessment and risk reduction.

2 **Improve** best practice for assessing and reducing risk of local source and non-seismic tsunami sources.

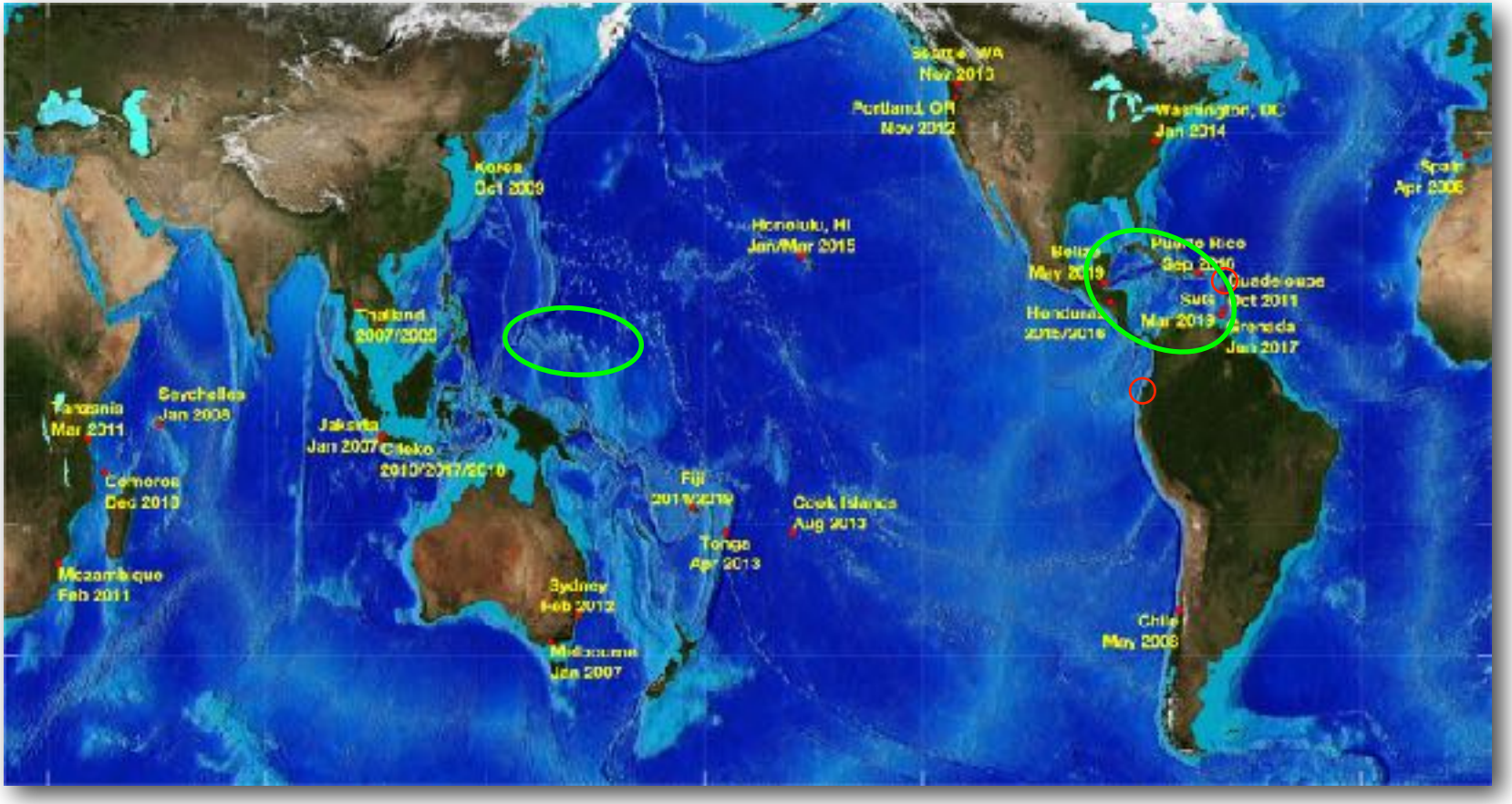
3 **Develop** projects to address gaps or areas for improvement in tsunami risk assessment and risk reduction, this may include land-use planning, vertical evacuation or supporting early warning

4 improvements

SOME KEY INTERSESSIONAL ACTIVITITES

1. IOC/PTWS Workshop of experts in Tsunami Sources and Risks in the for Peru and Chile to develop unified tsunami source scenarios for tsunami hazard assessments (report is being prepared)
2. U.S. NTHMP efforts to develop seismic source scenarios for tsunami hazard assessment efforts (ongoing)
3. Participated in IOC ad hoc groups for developing recommendations for monitoring and warning for non-seismic tsunamis (tsunamis generated by volcanos and meteotsunamis)
4. Tsunami hazard assessments for sites around the Pacific and other world oceans
5. Tsunami Hazard Assessment tools:
    1. TsuCat Version 4.3.2 new version
    2. ComMIT 1.8.3
    3. SIFT — Short-term Inundation Forecast. Added GFAST capability to use GNSS data for tsunami source assessment. Worked with Chile and New Zealand to research installations for future use.
    4. Tweb — internet access to tsunami events simulations and data for training, research, development and sharing results

Tsunami Hazard Assessment training/studies

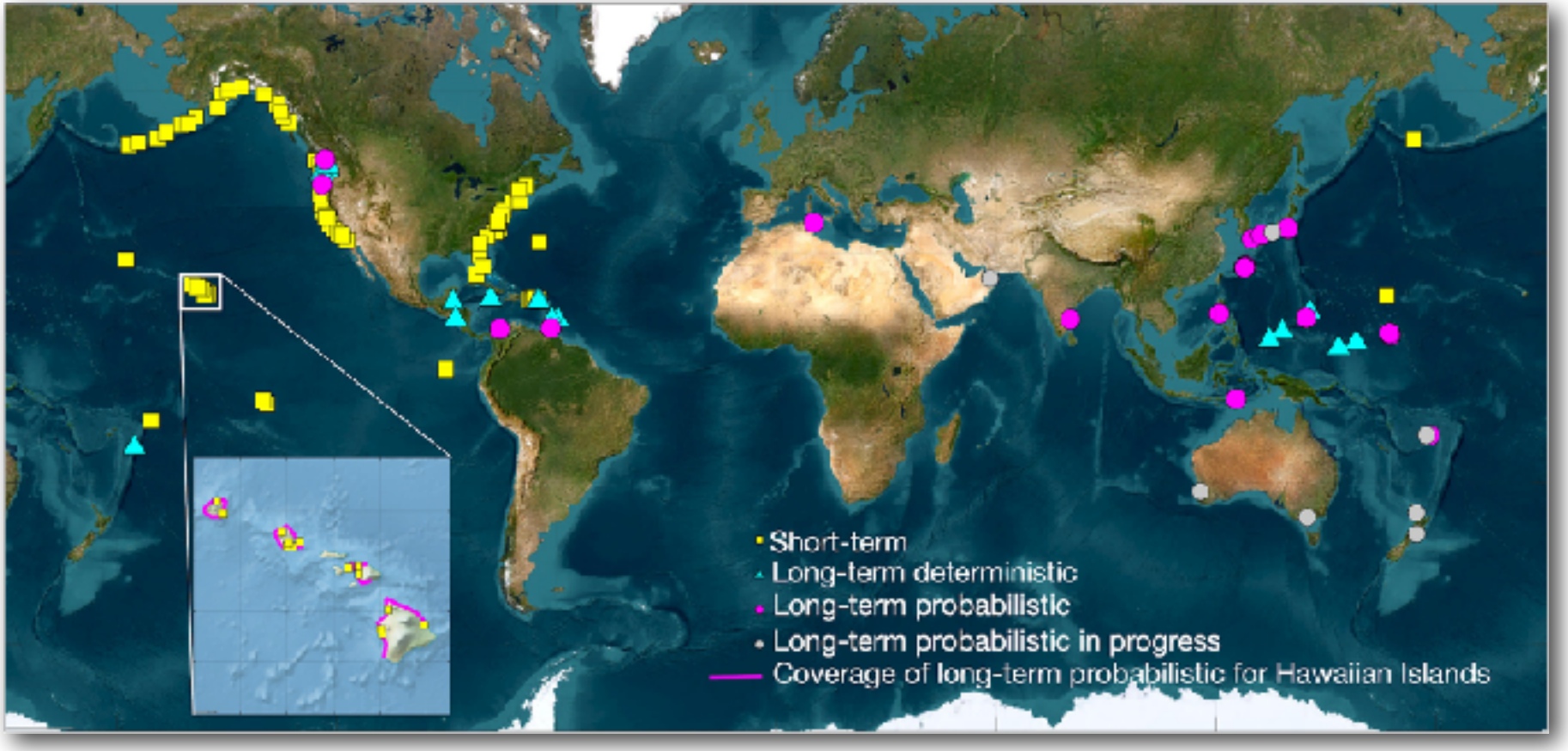


Tsunami Hazard Assessments:
Caribbean: Barbados, USVI (St. Thomas, St. John and St. Croix), Grenada (including Carriacou), Saint Vincent and the Grenadines, Belize City, Belize, Montego Bay, Jamaica
Pacific: Chuuk, Yap, Pohnpei, Majuro and Palau, Cedeño, Honduras

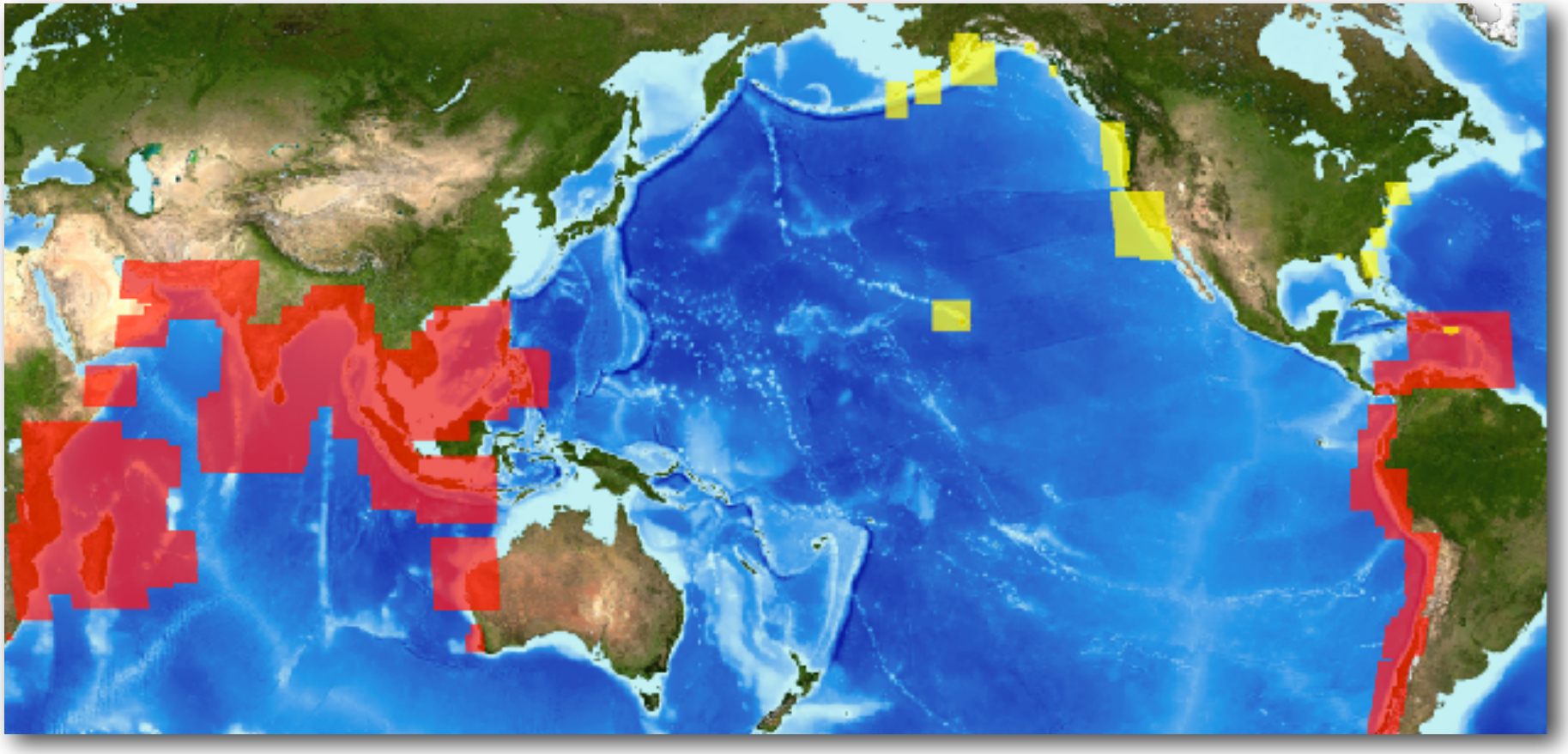
Post 2021 training: 2021 Ecuador and 2022 Barbados

Pre-2021 trainings

Tsunami Hazard Assessment studies (past, present and future)

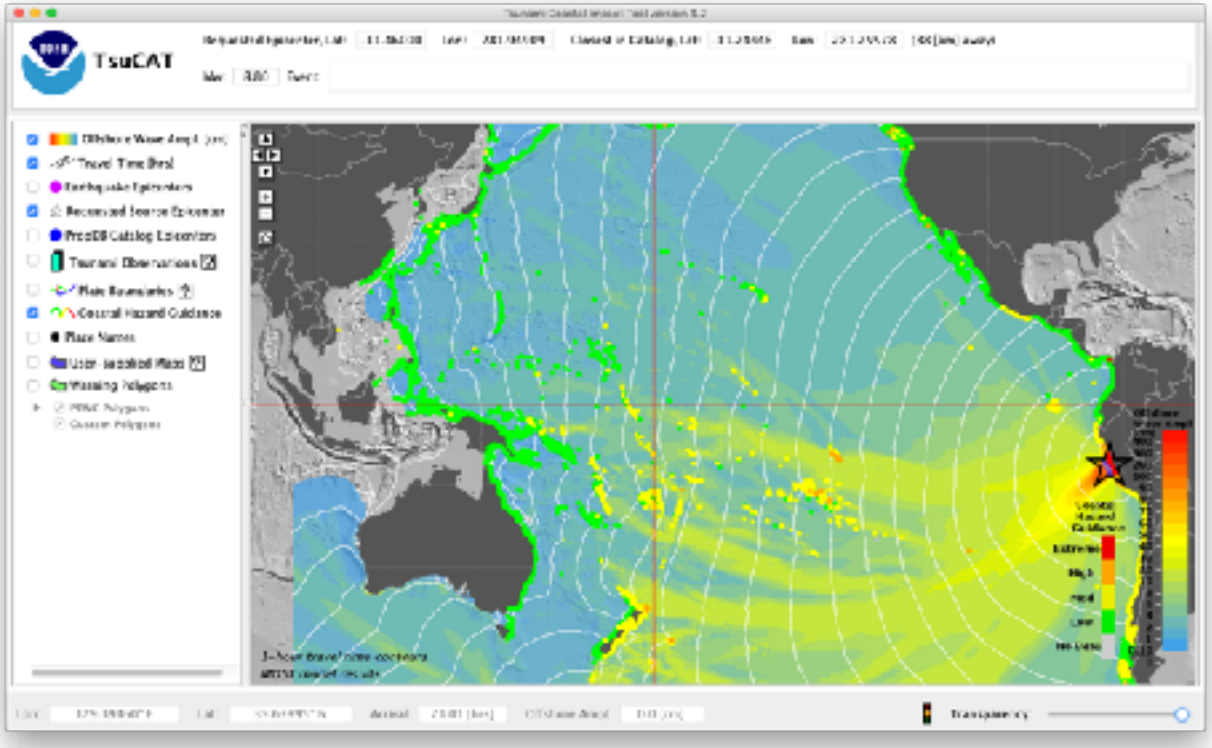


Tsunami Hazard Assessment studies (past, present and future)



Model areas developed for hazard assessment studies before 2009

TsuCat Version 4.3.2



August 2023 - Version 4.3.2
- Adjusted colorbar and disclaimer in KMZ file for PTWC Messages product
- Turned off Custom Polygons when generating PTWC Messages product
- Changed PTWC Messages to use "Start time of Exercise" for local time zone (keeping UTC for event messages)
- Made small changes in PTWC Messages Injects: removed local time reduncancy (see above), changed wording of
  CISN Display inject (and others)
- Limited simulated wave amplitudes at tide gauges to 5-meters (tide gauges usually overtop above this value)
- PTWC Messages events now end at a more realistic time (using 30-cm basinwide cutoff)
- Made the new DART layer time-dependant: now real events show the actual buoys that were in the water at the time
  (for all other simulations the current, August 2023 DART array locations are shown).

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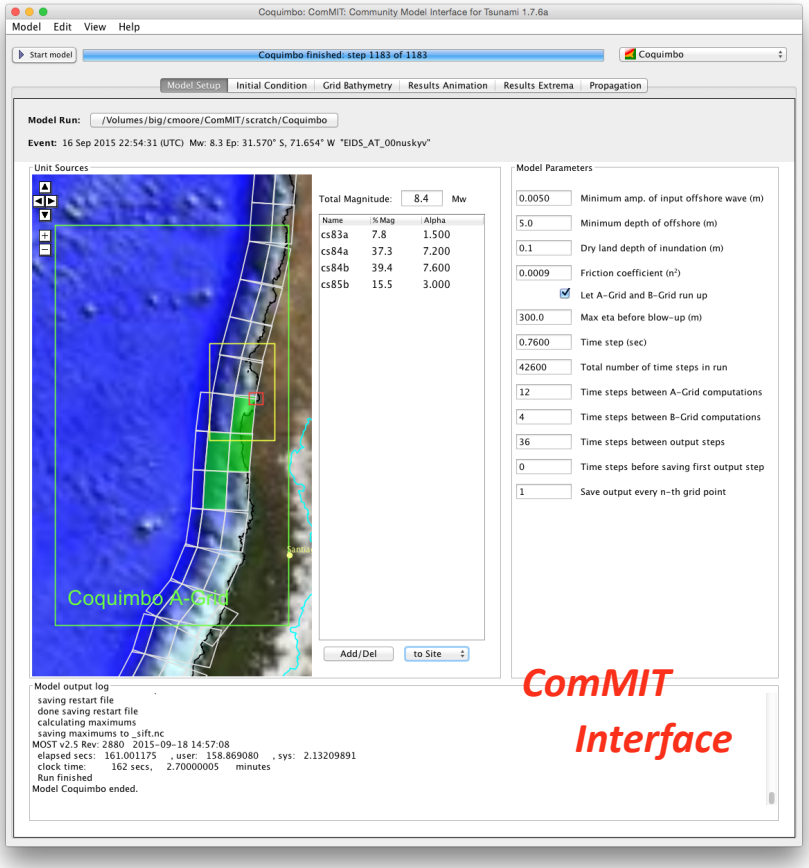
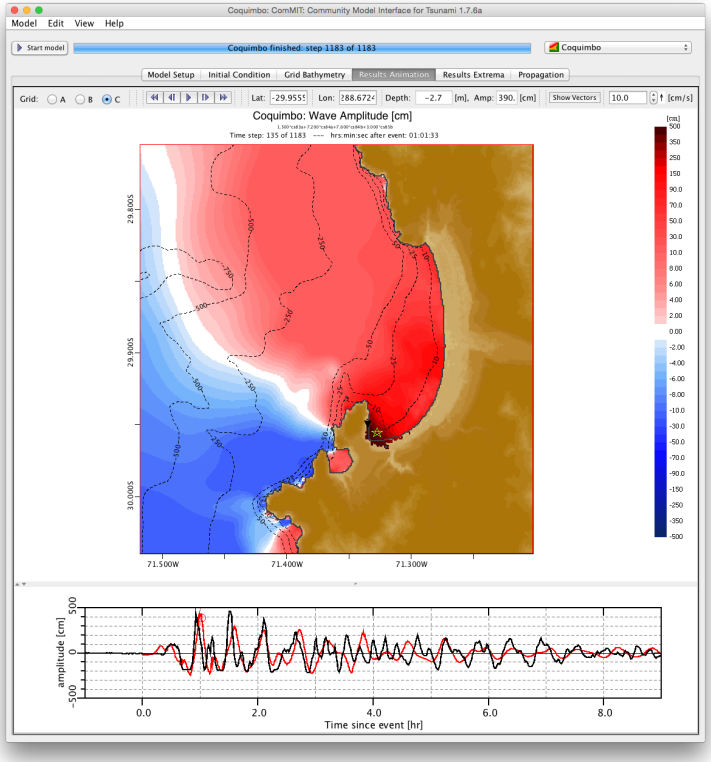
ComMIT 1.8.3 (COMmunity Model Interface for Tsunami)

- ComMIT 1.8.3 uses global tsunami propagation database as input for local inundation models





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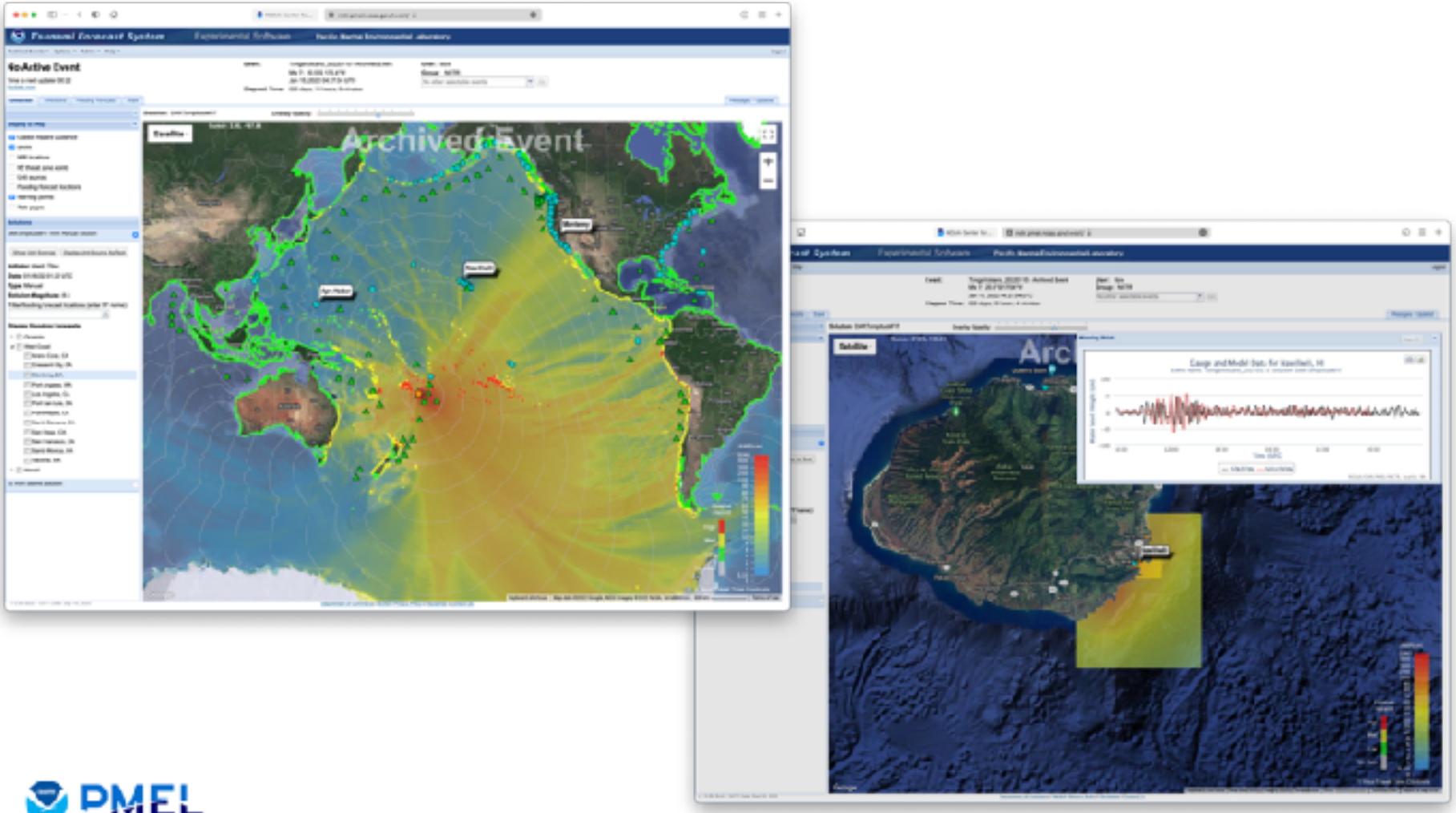
Tweb

web-based tsunami modeling tool to generate, view, and share tsunami event simulations

- Tweb is updated to use global tsunami propagation database



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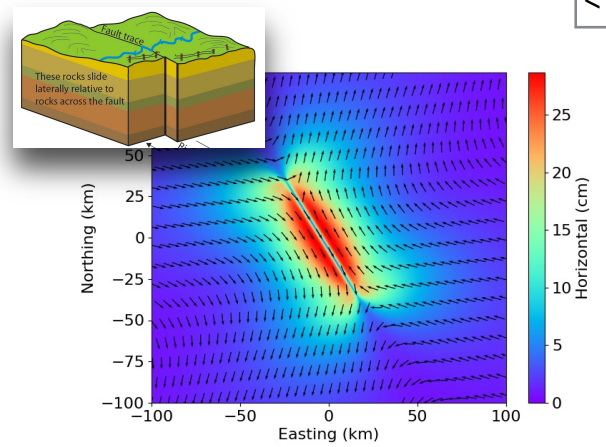
Integration of GNSS data analysis into SIFT

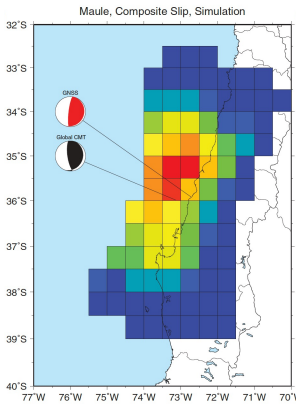
G-FAST Moment Tensor and Finite Fault Solutions

< 5 mins after OT

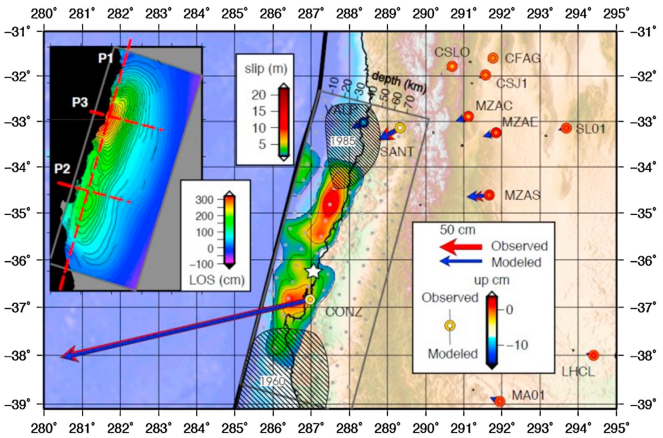


Delouis et al., GRL, 2011
Melgar et al., GRL, 2015
Crowell et al., SRL, 2018

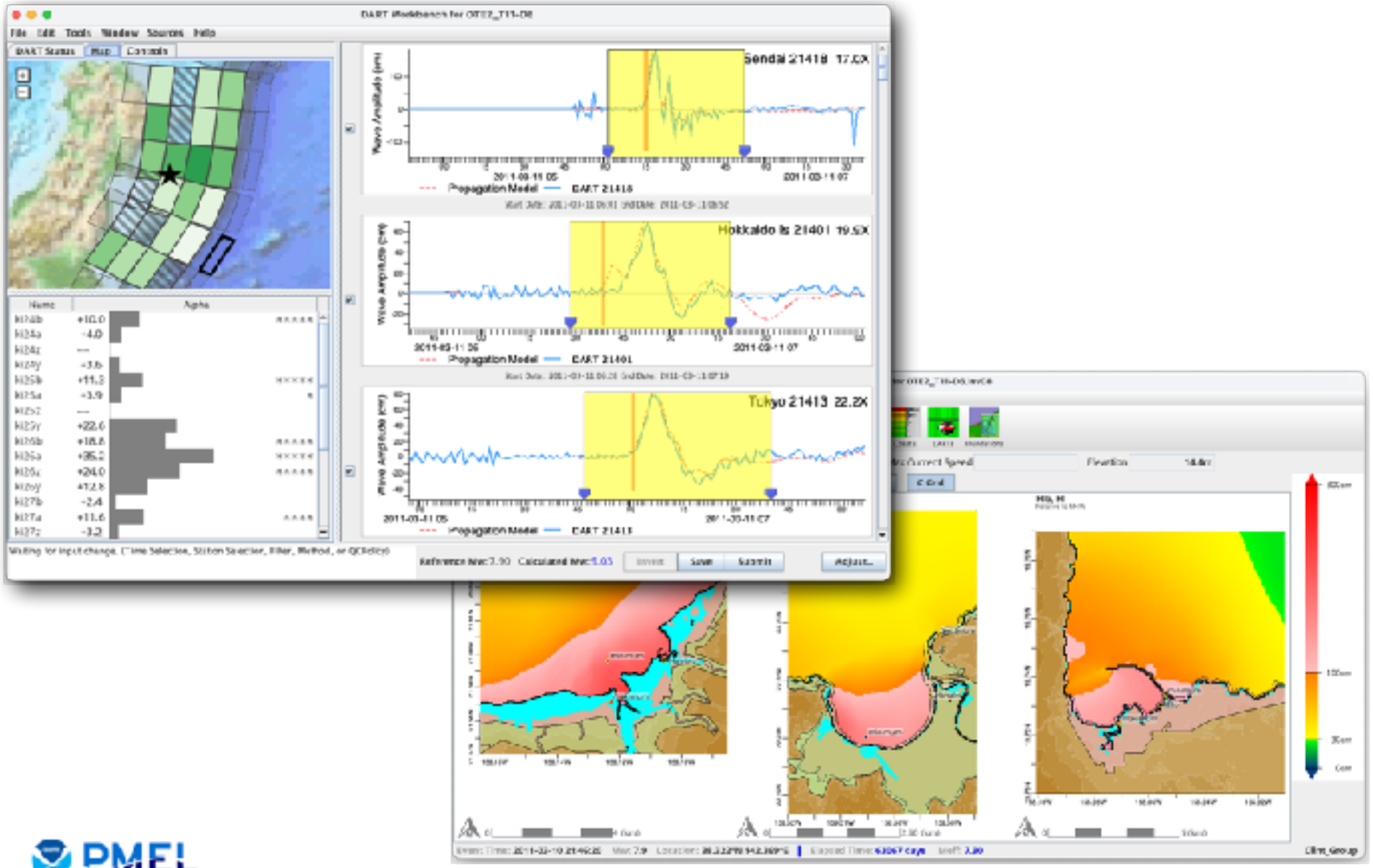
Real-time



Post-processed



Integration of GNSS data analysis into SIFT



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